stricture with sounds, bougies, or Hegar dilators over a considerable period of time. This operation is carried out after a local anesthetic has been applied to the urethral mucous membrane. The dilating instruments should be generously lubricated before insertion and the largest instrument passed at any sitting should be left in place for from ten to fifteen minutes. The size of the dilators used must be determined each time by the degree of pain caused. It is necessary to avoid any severe pain when the treatments are so frequently repeated, as well as to avoid considerable trauma. At first daily treatments are given, but later the intervals between sittings can be increased, and the treatments should be continued over a period of several months. These patients ought to be warned that recurrences are common, and that for this reason they are to return several times a year for dilatation.

PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

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On the Claim that Some Typhoid-Paratyphoid Strains Survive the Milk Pasteurization.—KNUMWIEDE and NOBLE (*Jour. Infect. Dis.*, 1921, 29, 310) found that "there is no evidence that bacilli of the typhoid and paratyphoid group even in small numbers, will survive heating to 60° C., for twenty minutes," suggesting that the apparent heat resistance of the strains reported by TWISS (*Jour. Infect. Dis.*, 1920, 26, 165) was due to the test method employed, namely, the use of cotton plugged flasks submerged to twice the depths of the milk. The authors used 27 typhoid cultures recently isolated from carriers, 7 paratyphoid A, 12 paratyphoid B and 4 enteritidis cultures. Milk was sterilized and 100 cc of it was infected with the cultural growth from two twenty-four hour agar slants suspended in salt solution. The bacterial suspension was added after the milk had reached 60° C., rubber stoppers were inserted, the bottles vigorously shaken and completely submerged in a water bath for fifteen minutes. No bacteria survived a pasteurization period thus limited closely to fifteen minutes at 60° C.

Antirabic Vaccination by Means of Desiccated Virus.—With slight modifications, D'AUNOY (*Jour. Infect. Dis.*, 1921, 29, 261) has employed a desiccated virus prepared according to Harris on account of its capability of production in a short time and preservation over indefinite periods. Full grown, healthy rabbits, averaging 2200 gm. were inoculated into the lateral ventricles after trephining with about 0.004 mg.

of desiccated fixed virus in 1 cc of sterile salt solution. The animal developed symptoms in six or seven days and when complete paresis had intervened, was killed by ether narcosis. The cord and brain were then removed aseptiently, and the membranes were stripped off by needles. By grinding with salt solution, the nerve tissue was brought to n coarse paste in a mortar. Carbon dioxide snow was then added with constant mixing and triturating until the mass lnd solidified. The mass was then placed in n ment grinder and kept at a temperature of about 12° C. for a few hours, a small amount of CO_2 again added and quick grinding accomplished. The ground material was spread in a thin-layer and dried in a Scheibler desiccator nt from 12 to 18° C. With a vacuum of 2 mm of mercury, and phosphoric anhydride, complete desiccation was procured in about thirty-six hours. The dried virus was kept in large glass tubes in a dark place at from 10 to 15° C. Control cultures of every batch of virus were instituted. The unit or "minimnl infective dose" consists of the least amount of virus which within five days after preparation will cause paresis in a 2400 gm. rabbit on the seventh day following intracerebral injection. A virus containing 300 to 500 "minimal infective doses" per mg. was readily produced. It will lose no infectivity at 10° C. for over two years and will last about three years at 8 to 12° C. Adults were given 11 treatments of a total of 17,750 "minimnl infective doses" except in severe head injuries when 15 treatments of a total of 25,750 m. i. d. were administered subcutaneously. Only 1 death following complete treatment is reported in 1538 treated patients; 697 injuries by animals proved to be rabid. No paralysis or other untoward effects were encountered in the treated persons. The author feels that his results "on the basis of comparison with similar reports on the use of the original Pasteur dried cord method, argue for the efficaciousness and safety of the desiccated virus method of prophylactic antirabic vaccination."

Botulism from Cheese.—Evidence that botulism is widely disseminated in this country can be found in the sporadic reports which have appeared in recent years. Although it was once thought that the botulinus toxin was produced only in the presence of meat protein, Dickson was able to find it in the presence of vegetable protein and now NEVIN (*Jour. Inf. Dis.*, 1921, **27**, 226) reports the recovery of both B. botulinus and its toxin from home-made cottage cheese, after the ingestion of which three persons died. Two cases presented paralysis of the muscles of deglutition, suffusion of the face, ptosis, total dilatation nnd failure of the pupils to react to light and paralysis of the muscles of the throat with difficulty of speech. The third patient was unable to swallow. There was no loss of consciousness or paresis of any other part of the body. Subcutaneous inoculation of 3 cc of an emulsion of the cheese, after forty-eight hours' incubation at 37° C., killed guinea-pigs within thirty-six hours. By anaërobic methods, a Gram-positive, motile, oval, sporebearing bacillus was isolated. No capsule could be demonstrated, gelatin was liquefied slowly and milk coagulated in three days. Many carbohydrates were fermented with the production of gas nnd the odor of butyric acid. A potent toxin was produced on a peptone-free medium. Guinea-pigs

were killed in four days with 0.0005 cc of the filtrate of a seventy-two hour culture. A protective serum was produced in rabbits against the homologous toxin. The author states that this is the first time that B. botulinus has been isolated from cheese, that a soluble bacterial toxin has been detected in cheese and that B. botulinus has been isolated in America.

Studies on the Chemotherapy of the Experimental Typhoid Carrier Condition.—Appreciating the menace of typhoid carriers to society and conceiving the probability that certain anilin derivatives may be toxic to the typhoid bacillus in vivo, BECKWITH (*Jour. Infect. Dis.*, 1921, **29**, 495) administered auramine, acriflavin, proflavine, pyronine G and new fast-green 3 B—all of which showed bactericidal action in bile and serum—intravenously into rabbits in which the typhoid carrier state had been produced by the Gay-Claypole technic. It was found that acriflavine and proflavine were more germicidal in the presence of serum than in its absence, while bile usually depressed the activity of the stains as much as serum. All the stains save new fast-green 3 B, although bactericidal to B. typhosus in vitro, did not sterilize the gall-bladders when introduced intravenously. Auramine was too toxic and the others were excreted through the urine rather than the bile. The writer believes that new fast-green 3 B "offers possibilities as a germicide in vivo for B. typhosus in gall-bladders of experimental rabbit carriers," inasmuch as it retains its activity in serum and bile and is excreted through the bile when administered intravenously, although it does not clear up the condition in all animals. The dye changes readily from the sol to the gel state and may be very toxic to the animal.

Comparison of Formol and Wassermann Reactions in Diagnosis of Syphilis.—Following the report of Gaté and Papacostas, that pooled syphilitic serum was coagulated by a small quantity of formalin, while nonsyphilitic serum failed to give the reaction, ECKER (*Jour. Infect. Dis.*, 1921, **29**, 359) conducted 500 comparative tests, employing the ice-box method for the Wassermann reaction with syphilitic fetal liver, normal human and beef-heart antigens. The technic of "formol" method consisted in adding two drops of Schering's or C. P. formalin, in both acid and neutralized solution, to 1 cc of clear serum, shaking gently in tubes plugged with cotton or more tightly and incubating for from twenty-four to forty-eight hours at temperatures of either ice-box, room or 37° C. Whereas, in a series of 400 comparative tests Gaté and Papacostas found agreement in 85 per cent, only 37.09 per cent of the total number of positive reactions agreed in the writer's series, which compared more closely with the 27.27 per cent as found in a similar work by Pauzot. Forty-four per cent of the formol positives were of the + type, and of these, 13 were positive by the Wassermann. The writer concludes that "the reaction as it stands is of no diagnostic value because of its failure to react in clinically and serologically clear-cut cases of syphilis and the occurrence of positive reaction in the absence of the disease."

HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

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Tuberculosis of Husband and Wife.—BARNES (*Am. Rev. Tubere.*, 1921, **5**, 670) states that the histories of 229 consecutive widowed patients admitted to the Rhode Island State Sanatorium, 1905 to 1921, show that 93, or 40 per cent, lost their consorts by death from tuberculosis, a tuberculosis mortality over three times that of the married people of the community. Immunity from many diseases is short-lived and until much more convincing evidence of permanent immunity against tuberculosis conferred by childhood infections is forthcoming, a cautious logic will not accept the confident statements that are being made as to the impossibility or rarity of adult infection.

The Etiology of Typhus Fever.—The past twelve years have witnessed an energetic investigation into the precise nature of the virus of typhus fever. A number of bacteria have been brought forward as causal agents of the disease. Two of these attracted special attention; namely, *Rickettsia prowazecki* of da Rocha-Lima and *B. typhi exanthematici* of Plotz. Several years ago, OLITSKY (*Jour. Infect. Dis.*, 1916, **19**, 811) was led to accept the etiological relationship of Plotz's bacillus to typhus fever by the fact that he found specific antibodies against the organism in the blood of typhus patients; that with it, it was believed, experimental typhus in guinea-pigs had been induced and that a similar bacterium was recovered from typhus-infected lice. Olitsky (*Jour. Exp. Med.*, 1921, **34**, 525) revises his judgment concerning Plotz's bacillus, for he finds that in the early stages of typhus fever in guinea-pigs the typhus virus can be obtained wholly free from admixture with any of the ordinary bacteria. Furthermore, the body of the guinea-pig reacting to the virus of typhus fever is readily invaded by a variety of bacteria whose presence complicates the typhus infection, but which have no etiological relation to the specific disease, typhus fever. Olitsky showed that during the period of incubation and before the onset of fever no ordinary bacteria appear in the cultures, while on the first day of the febrile reaction different bacteria were found in 6 of 26 guinea-pigs cultured; on the second day, in 10 of 16; on the third day, in 3 of 4; and on the fourth day in cultures of all of the 4 guinea-pigs observed. The findings indicate that the virus of typhus fever is distinct from ordinary cultivable bacteria, and, as the disease set up by the virus progresses, the infected guinea-pigs become subject to